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~~--15~~⁴ Magnetic tape according to Claim ~~14~~⁴, wherein the primary control track is located essentially centrally on the data medium.--

~~--16~~⁴ Magnetic tape according to Claim ~~14~~⁴, wherein the secondary control track is located in the vicinity of an edge of the data medium within the initial region of each data section.--

R E M A R K S

Attached is a Petition for an Extension of Time Under 37 CFR 1.136(a). The Applicants submit that this response is therefore timely.

Also attached is a letter to the Official Draftsperson enclosing a new drawing which overcomes the objections contained in the Notice of Drawing Review.

The present invention according to new independent Claim 11 relates to a method for tracking control of a reading head on a data medium. In particular, the data medium is a magnetic tape with a plurality of data tracks recorded onto it. The data tracks are recorded parallel to the edges of the tape and are divided into successive data sections, which are subdivided into an initial region and a useful region. According to the inventive method, primary measured values are determined from a first control track. The first control track extends within the initial region and the useful region of each data section. Hence, the primary measured values are provided continuously while a data section moves past the read head. Secondary measured values are determined from a second control track. The second control track extends only within the initial region. Consequently, the secondary measured values are available only while an initial region moves past the read head.

Only the primary measured values are utilized to determine a first tracking signal, whereas both the primary and the secondary measured values are utilized to determine a second tracking signal. The second tracking signal contains more complete tracking information because it relies on more data provided by both the primary and the secondary measured values. The additional information is captured by a difference signal generated by a comparison of the first and second tracking signal.

The difference signal is stored so it is usable during the time interval when the second tracking signal is not available, i.e. while the useful region of a data section moves past the read head.

A tracking control signal applied to an actuator is generated. The actuator is effective to adjust the reading positions or areas addressable by the reading head. An important feature of the inventive method is that the tracking control signal is generated

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from the second tracking signal while the initial region of a data section moves past the read head. However, the tracking control signal is generated from the first tracking signal and the difference signal while the useful region of a data section moves past the read head, i.e. during a time interval when there is no second tracking signal.

In this way it is possible to take advantage of the additional tracking information contained in the difference signal without the necessity to have a second control track in the useful region of a data section. As a result, this increases the density of useful data on the tape, because the second control track does not extend into the useful region of a data section.

The inventive method is neither shown nor suggested by the cited prior art.

Pahr (US 5,294,791) describes a method for controlling the position of a magnetic head relative to a servo track of a tape by optical detection of an edge of the tape. Fig. 17 illustrates the data track tape format utilized by the known method. Contrary to the invention, the servo tracks of Pahr extend along the entire tape direction. Besides the servo tracks, the tape edges are used for the tracking control by means of a tape edge detector chip 10. Generating a second tracking signal, generated from a second control track extending only within particular regions on the recorded tracks, is neither shown nor suggested.


Seo et al. (US 5,943,180) does not describe the generation of a first tracking signal from a first control track extending along the entire data section. Servo burst reproduction signals are reproduced by the respective head gaps 8-1 to 8-4, and outputted from the servo burst signal recording sections 4 (column 5, lines 6 to 9; Fig. 1).

A combination of Pahr and Seo et al does not lead a person skilled in the art to the inventive method because neither of the documents shows or suggests the generation of a difference signal and its use for generating a tracking control signal.

Walker (US 3,919,697) suggests a tracking method of longitudinal data tracks on a magnetic tape. The tracking information is recorded in the gaps between sections containing the useful data. There is no control track extending into the section of the useful data.

Henry et al. (US 4,802,030) disclose an apparatus for aligning a read/write head over previously written data on a magnetic tape in a tape drive. According to the known apparatus, the edge of the tape is electronically detected without using a control track.

Ayres et al (US 5,726,824) describe a method of positioning the read/write head onto a multi-track recorder/player utilizing a plurality of registration stripes to find the central axis of a data track. The registration stripes are made by the read/write head when



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the tape is formatted (column 3, lines 38, 39; Fig. 1). There are no control tracks as described by the invention.

For these reasons, Walker and Henry et al. are submitted to be remote from the claimed invention.

The arguments presented above apply correspondingly to the recording method according to Claim 13 and the tape according to Claim 14.

Claims 12, 15 and 16 are dependent from Claims 11 and 14, respectively, and are submitted to be patentable as their parent claims.

It is therefore submitted that the present invention is patentable over the prior art.

The Applicants submit that the instant application is now in condition for allowance. A notice to that effect is respectfully solicited.

Respectfully submitted,

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Abstract

A method for tracking control of a head unit with respect to data tracks on a magnetic tape determines a first tracking signal and a second tracking signal from control tracks recorded on the tape. The data tracks are divided into successive data sections, each of which is subdivided into an initial region and a useful region. A first control track extends over the entire length of the data section. In addition to this, a second control track is provided in the initial region of each data section. A first tracking signal is generated from the first control track and a second tracking signal is generated from the first and second control track. A difference signal is generated and stored, which is based on a comparison of the first and second tracking signal. A tracking control signal applied to an actuator adjusting the head unit is generated from the second tracking signal when the second tracking signal is available. The tracking control signal is generated from the first tracking signal and the difference signal when the second tracking signal is not available.

~~Figure 2.~~
